



# Contour Surface Coal Mines, West Virginia

## Inspecting Coal Mining Permits using Unmanned Aerial Systems

November 6-8, 2012



A closer view of the gimbal camera with the HD GoPro payload



The Office of Surface Mining, Reclamation and Enforcement (OSMRE) inquired about the possible use of UAS technology provided by the USGS to help with permitted inspections of dangerous mines and mines with difficult areas of access. The success of OSMRE is measured as a percentage of no offsite impacts, outside the mine permit boundaries.

Inspectors measured the amount of coverage collected via UAV platform and compared the results to traditional ground based inspection methods to compare efficiency.



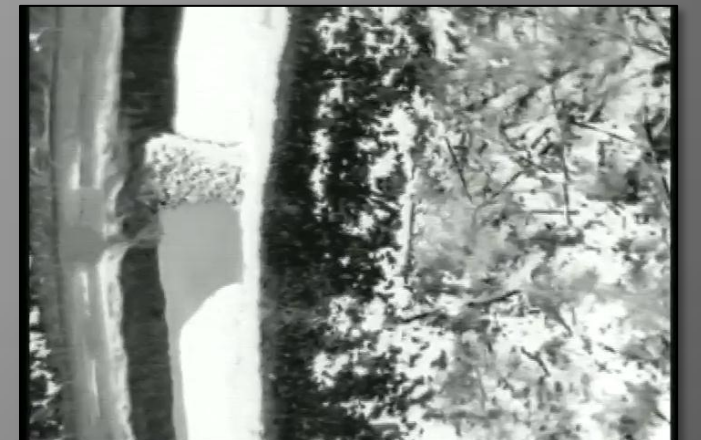
West Virginia Coal Seam



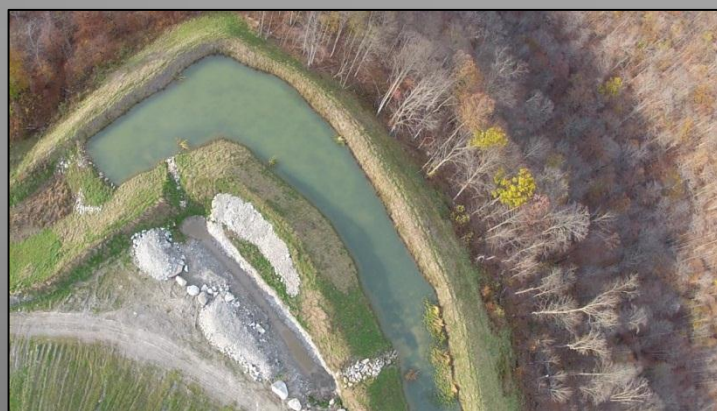
Aerial view of an impoundment dam



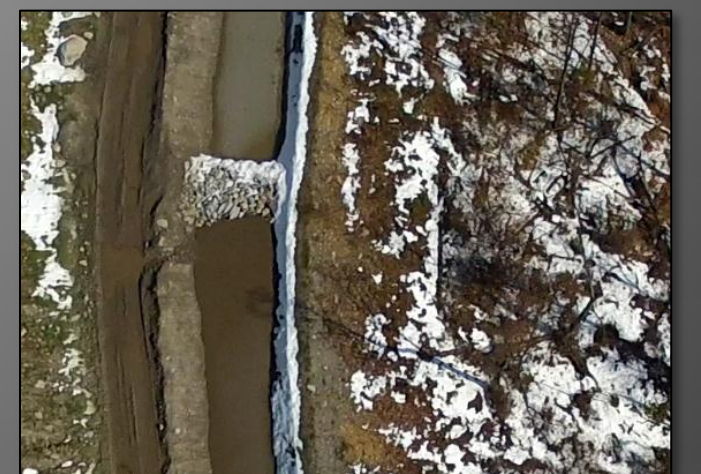
T-Hawk flight logs provide an inspection history and record



T-Hawk IR image of sediment drainage ditch



The hover and stare capability provides inspectors an improved view in the field



T-Hawk EO image of sediment drainage ditch



T-Hawk imagery can help detect erosion issues in areas difficult to access



A view of sediment drainage ditch and check dams